UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

October 1, 2012

Mr. M. H. Smith
Captain, U.S. Navy Commander
Department of the Navy
Naval Surface Warfare Center Dahlgren Division
6149 Welsh Road, Suite 203
Dahlgren, VA 22448-5117

Re: Outdoor Research, Development, Test, and Evaluation Activities Naval Surface Warfare Center, Dahlgren, Virginia Draft Environmental Impact Statement (CEQ #20120267)

Dear Mr. Smith:

In accordance with the National Environmental Policy Act (NEPA) of 1969, Section 309 of the Clean Air Act and the Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), the U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the Outdoor Research, Development, Test and Evaluation (RDT&E) Activities within the Potomac River Test Range and Explosives Experimental Area Complexes, the Mission Area and Special-Use Airspace at Naval Support Facility Dahlgren in Virginia.

The Proposed Action would expand the Naval Surface Warfare Center Dahlgren Division's (NSWCDD) RDT&E activities within the Potomac River Test Range (PRTR) and Explosives Experimental Area (EEA) Range complexes, the adjoining Mission Area, and the Special-Use Airspace (SUA). These RDT&E activities include outdoor operations that require the use of ordnance, electromagnetic energy, lasers, chemical and biological simulants. The average number of events that could take place annually (with the exception of large-caliber gun firing events) would increase above recent levels. To ensure that equipment and materials work effectively, even in less-than-ideal conditions, some activities would take place under conditions in which activities are now rarely/never conducted, such as at dusk, dawn, and night and in adverse weather.

The purpose of the Proposed Action is to enable NSWCDD to meet current and future mission-related warfare and force-protection requirements by providing RDT&E of surface ship combat systems, ordnance, lasers and directed energy, force-level warfare, and homeland and force protection. The need for the Proposed Action is to enable the Navy and other stakeholders to successfully meet current and future national and global defense challenges required under 10 U.S.C. §5062(d) by developing a robust capability to carry out assigned RDT&E activities on range complexes, in the Mission Area, and in SUA at NSF Dahlgren.

In addition to the No Action Alternative, the Navy proposes two action alternatives, Alternative 1 and Alternative 2 (the Preferred Alternative). Alternative 1 includes annual increases of 325 percent in small arms firing, 5 percent in detonations, 20 percent in EM energy events, 108 percent in laser events, 400 percent in chemical/biological events, and 16 percent in PRTR hours of use above recent levels. Alternative 2 includes annual increases of 400 percent in small arms firing, 21 percent in detonations, 39 percent in EM energy events, 142 percent in laser events, 483 percent in chemical/biological events, and 33 percent in PRTR hours of use above recent levels.

EPA understands the purpose and need for the proposed action for the Navy's Outdoor RDT&E activities. However, as a result of our review of the DEIS, EPA has concerns with impacts to air, water, biological resources, environmental justice, children's/human health and cumulative impacts. A detailed description of these concerns is presented in the Technical Comments (enclosed) for your consideration. EPA rated the DEIS an EC-2 (Environmental Concerns/Insufficient Information), which indicates that we have environmental concerns regarding the proposal and that there is insufficient information in the document to fully assess the environmental impacts of this project. A copy of EPA's rating system is enclosed for your information.

Thank you for providing EPA with the opportunity to review this project. EPA would appreciate the opportunity to discuss some of the topics and questions raised in the Technical Comments. If you have questions regarding these comments, the staff contact for this project is Karen DelGrosso; she can be reached at 215-814-2765.

Sincerely,

Barbara Rudnick
NEPA Team Leader
Office of Environmental Programs

Enclosure (2)

Technical Comments

Alternatives

Page 4-6 states, "Unlike the No Action Alternative, Alternative 1 would support the recommendation from the RSIP to promote NDW as an RTD&E center that stands out among other regions, since it would allow NSWCDD to better accommodate new and emerging RDT&E needs and requirements. Because it would result in NSWCDD's making better use of its facilities at NSF Dahlgren, Alternative 1 would also support the RSIP's recommendation to maximize existing facilities for highest and best use." Page 4-10 states, "Alternative 2 would better support the recommendations of the RSIP to promote NDW as an RTD&E center that stands out among other regions and maximize existing facilities for the highest and best use than would Alternative 1." EPA is not certain that the proposed activities would not pose an impact to human and environmental health at the quantities proposed. In addition, there is no distinct reason to selecting Alternative 2 as the Preferred Alternative since both (Alternative 1 and 2) meet the needs and goals of the Navy. Thus, EPA suggests considering a more conservative approach such as phasing in of increased activities and questions whether the additional increase in activities from Alternative 2 would be worth the added risks to environment and human health.

Small Arms Activities

As the DEIS states (page 2-11), "As is the case today, much of the future small arms firing would take place indoors, but some must be done outdoors." The average annual activities under the No Action Alternative would result in 6,000 bullets, Alternative 1 proposes 25,500 bullets, and Alternative 2 proposes 30,000 bullets. What is the ratio of bullets fired indoors versus outdoors for each alternative?

The DEIS states, "Bullets will be fired at targets on land that will trap them and over the river at targets up to 4,000 yards from shore where the bullets will enter the river and not be recovered." Considering the increase in the number of bullets proposed, is it possible to add catch basins/netting to the river targets to capture the bullets so as not to sink to the river bottom?

Page 1-24 states, "Most bullets fired are inert – made of solid metal with no explosive filler – but some are explosive." With a maximum number of bullets proposed (30,000), what percent of projectiles to be fired from the PRTR land ranges into the Potomac River would be inert and what percentage would be live explosives?

Electromagnetic Energy

Proposed Activities using electromagnetic energy both low-powered and high-powered should be evaluated by the Federal Communications Commission (FCC) for safety. The Distribution List did not include the FCC. Please coordinate activities with the FCC to determine and confirm safe exposure levels for hazards of electromagnetic radiation to fuel, ordnance and personnel.

Chemical Simulants

While it is true that the chemicals proposed for use in the DEIS have low-to-moderate toxicities, they are not without risk (some more than others). Even chemicals that are designated as "relatively non-toxic" can cause harm at high enough doses. So, the important point is not so much which chemicals are being used, as how much of those chemicals are being released and who is being exposed.

There is no information in the report on possible human receptors, but Section 4 of the DEIS does provide modeled data on the maximum concentrations expected for a few of the chemical simulants. The predicted concentrations are very high, both at the time of release and 10 minutes later -- high enough to produce adverse effects in exposed individuals, such as irritation (respiratory, eye, and dermal). (Note that Figure 4.4-1 indicates that the concentration of DEM in air decreases to zero after approximately five minutes, but this is not supported by Table 4.4-2, Modeled Maximum Air Concentration after 10 Minutes.)

To allow the military base to fulfill its task, EPA recommends the Navy 1) provide adequate worker safety (in the form of personnel protective equipment), 2) conduct real-time air monitoring during release activities and 3) ensure that individuals not involved in testing are restricted from areas affected by releases.

Biological Simulants

A few of the biological agents proposed for testing are, in fact, pathogenic to humans; these are *B. atrophaeus* and *Aspergillus niger*. If available, other similar, non-pathogenic simulants should be used instead. If not, the steps described above for chemical simulants should be considered. Note, however, that some organisms can persist in the environment for a very long time; consequently, these precautions may not fully protect individuals from future exposures. Of particular concern, are the impacts to sensitive individuals who are more at risk that the "healthy adult" used in your analysis.

Page 2-21 states, "All of the sensor-testing described in the preceding section could be repeated with the introduction of interferents, smokes, or obscurants. Examples of these include fog oil, PEG 200, poly alpha olephin, paints, fuels, and cleaners." What is the interaction of these chemicals with the chemical and/or biological agents proposed? What are the risks? Again, EPA suggests that the Navy conduct real-time air monitoring at the time of release.

Air Quality

As stated on page 3-55, "Consequently, the general conformity rule does not apply to the Proposed Action within this nonattainment area since no change in emissions would occur." Page 3-59 states, "All chemical simulants previously used and proposed for future use are not considered criteria pollutants under the CAA and are not hazardous air pollutants." In addition, "Concentration levels modeled in 2002 for each simulant were within available NIOSH

guidelines, and there were no potential air quality effects from releasing these chemicals during testing. Additional modeling and testing performed in 2003, 2005, and 2009 showed no significant impacts from the testing of chemical simulants. There were no observable environmental effects during or after testing (Bossart, letter, February 9, 2006; NSWCDL, 2004; NSWCDL, 2005; NSWCDL, 2009)." The analyses conducted were at the No Action Alternative levels. The increase in chemical simulants proposed for Alternative 1 and 2 is significantly greater. EPA questions whether the significant increase in the quantity of chemical simulants proposed would produce the same results? Also, will the Navy continue to conduct modeling and testing? How frequently? If measurable results are found, what action(s) would the Navy take to ensure the safety of human health and the environment?

The DEIS determined that with a maximum increase of 483% for chemical/biological defense events and the addition of biological simulants, which may be mixed with chemical simulants, there would be negligible, long-term, direct and indirect, negative air quality impacts. Again, since historical modeling and testing has been performed at the No Action Alternative levels, it seems difficult to assume that the same determination would result with a much greater simulant concentration proposed (combined with emissions from other activities).

In addition, page 4-173 states, "There is no research on synergistic effects between low toxicity chemical and BSL-1 biological simulants most likely because given the low level of risk from both elements no synergistic effects are expected." The basis of this statement is unknown so it cannot be assumed that impacts would not occur. Although an air conformity analysis is not necessary, EPA reiterates the need to conduct real-time air monitoring during release activities to assess exposure to human health.

The Navy should disclose at what threshold would there be concern for air quality impacts, especially when considering increased activities? The DEIS should also discuss risks to human health as a result of chemical and biological interactions. The DEIS did not address this nor did it discuss monitoring commitments to ensure that proposed activities would, in fact, result in negligible impacts. Please discuss if the Navy plans to analyze/monitor air quality in combination with an increase in activities.

Surface Water/Water Quality Wetlands

The DEIS states that RDT&E activities would have little contact with surface water resources and minimal potential to affect them. Low concentrations of munitions constituents and simulants would enter surface water with predicted concentrations below standard detection levels. Chemical/biological defense activities would have no direct impacts and negligible, short-term, indirect, negative impacts. Naturally-occurring biosafety level (BSL)-1 organisms used in bio defense tests would not affect surface water. Page 4-112 states "No modeling was performed for biological simulants, as NSWCDD would only use BSL-1 simulants. BSL-1 bacteria, fungi, viruses, and proteins rarely cause reactions or diseases, and many are ubiquitous in the environment." EPA understands why no modeling was performed for biological simulants and why the Navy derived that there is no synergistic interaction with chemical and biological

simulants. However, when considering the quantity of biological simulants and activities proposed (cumulatively), EPA questions whether there will be negligible impacts to water quality and aquatic resources at the Alternative 2 level over the course of time.

Page 4-114 states that "For each chemical simulant event, the point concentrations of simulants that potentially could settle on the water surface or on land and be dispersed into surface waters would not increase. Simulants entering the PRTR and other surface waters would be rapidly diluted to well-below-detection levels." The DEIS states on page 4-116, "Simulant releases would be spaced so that no land or water area would be exposed multiple times to the same stimulant". In addition, "Concentrations of chemical simulants that would reach land would be very low – well below concentrations that have been shown to cause adverse effects – as would the concentrations that could be deposited on terrestrial vegetation or to which wetland communities would be exposed." How long can these simulants remain active in the environment? What spacing time is required to ensure that the land and water areas are not exposed multiple times to the same simulant? Is the dispersal rate greater within moving water? If so, is there concern that resources like wetlands, etc where there is less movement of water will have a greater impact?

Page 4-115 states, "Residues from the land-based firing of munitions and detonation of explosives that remain on land after operational range surface clearance could enter wetlands and floodplains via surface water or soil runoff and shallow groundwater discharge. Although some residues may migrate into these resources areas, they are expected occur at concentrations below most standard detection levels." The DEIS states that chemical/biological simulant exposure would be very low also. This then raises the question as to the cumulative impact to resources from all activities proposed. Also, what contingency plan will the Navy implement if its activities do result in considerable impact to resources? What threshold of chemical and/or biological simulant concentration would pose a concern for surface water, water quality, and wetlands when considering increased activity?

Page 3-258 states, "The MDNR has routinely sampled water quality year round in the Chesapeake Bay and the Potomac River (as well as other tidal tributaries to the Chesapeake) since 1985 (MDNR, 2010). Five MDNR monitoring stations are located in the vicinity of NSF Dahlgren and the PRTR, as shown on Figure 3-10-4. The MDNR collects data 12 to 20 times a year at the four Potomac River stations (RET2.2, RE2.4, LE2.2, and LE2.3) and 16 times a year at Station CB5.3 in the Chesapeake Bay, near the mouth of the Potomac." When viewing Figure 3.10-4, the MDNR monitoring stations are located closer to Maryland. Does Virginia sample water quality in the Chesapeake Bay and the Potomac River which would be in closer proximity to NSWCDD?

Page 3-269 discusses turbidity and it states, "As river discharge data for the Potomac River were not available for a gage in the vicinity of the PRTR, data from the United States Geological Survey (USGS) monitoring station near Washington, DC (Station 01646502) were

used in the analysis. The analysis indicated negligible correlations for the three downstream stations – LE2.2, LE2.3, and CB5.3." Can this be considered a fair account of the turbidity in the PRTR area?

Page 3-273 of the DEIS states, "Analysis of the probability-based sampling data indicated that in terms of the condition of the health of the benthic communities, the Potomac River is in poor condition." In addition (page 3-274) states, "The B-IBI scores within the Potomac River that are marginal or that meet the Chesapeake Bay benthic community restoration goals are relatively low compared to scores within the rest of the Chesapeake Bay watershed." Because of significant efforts to improve the health of the Chesapeake Bay, it is important to discuss the Navy's commitment to monitoring their activities in terms of water quality and water resources to ensure that the Navy's activities do not impede efforts to restoring the Bay and to be accountable to that which is outlined in Executive Order 13508, *Strategy for Protection and Restoring the Chesapeake Bay Watershed.*

Biological Resources

Page 4-135 states, "NSWCDD removes fired military munitions and range scrap and debris that are exposed on the ground surface or partially buried." How does the Navy remove munitions? Are munitions removed from wetlands, if entered?

Page 4-156 states, "Most detonations would take place on the EEA Complex's land ranges and would have negligible impact on aquatic invertebrates." What percentage of the increase will occur in the EEA Complex and what percentage in the PRTR? In addition, page 3-177 states that "A total of approximately 33 million lbs of constituents are associated with the 343,815 total rounds fired into the PRTR, as recorded in the log books." Discuss the possibility of burying organisms within sediment.

Page 4-159 (Vegetation, Plankton, Aquatic Invertebrates, and Fish) states, "…the quantities of chemical simulants released into the environment and the resulting concentrations of simulants in the river would be well below levels that could cause adverse effects." Please state whether the Navy proposes any monitoring (both air and water). There should be a monitoring plan in place to evaluate if impacts will occur over time. In addition, EPA questions whether the Navy has considered an Adaptive Management Approach. An Adaptive Management Approach is the ecosystem management counterpart to "learning from experience." These two concepts have two essential elements in common: 1) a feedback element that gathers and evaluates information about current performance (of an action or activity), and 2) an adjustment element that responds to feedback information by being able to alter future performance when needed." Please identify if the Navy has considered this approach and incorporated it into the Proposed Action.

Page 4-161 (Potomac River Birds), did the Navy considered the possibility of whether the birds can ingest bullets or projectiles?

Page 4-172, Please identify whether the bullets/projectiles contain lead and if so discuss impacts to the environment and/or biological resources.

Page 4-173 states, "The use of chem/bio simulants would have negligible impacts on Potomac River birds. Based upon previous events and modeling presented in Sections 4.4.1.2 and 4.11.1.4, simulant concentrations that Potomac River birds would be exposed to are predicted to be well below levels that would cause toxicity to them. The use of BSL-1 biological simulants would have no effects on birds, as some of these organisms are already naturally present in the area." The basis of this determination is not clear and needs more information. The Navy's effort to coordinate with the U.S. Fish and Wildlife Service (FWS) is recognized with its letter included in Appendix F. Although, FWS had not yet responded, their input and/or concurrence is important.

Page 4-177 states that "Semi-aquatic mammals, such as the river otter, muskrat, and mink, may spend much of their time on or near the Potomac River in search of prey. Would bullets impact the habitat of these animals and would they be at risk?

Environmental Justice

The methodology used to identify areas of potential Environmental Justice (EJ) concern is a matter of serious concern. The methodology used creates a major underestimation of areas of potential EJ concern. The errors in understand and application of the simple mathematics used in development benchmarks grossly misrepresents the manner in which the methodology and its mathematics are applied. The error is one that created additional burdens for any areas of EJ concern that may exist within the study area to an extent that may lead to a failure to identify all of the communities of EJ concern. The application of the mathematics in this inappropriate way may disenfranchise those seeking fair and appropriate treatment. To begin with, there seems to be some confusion as to the nature of the use of the state or county minority or low income population plus 20 percent. This is a very routine mathematical calculation that is used for any number of purposes. This calculation means that the percent minority population value as given in the document of 45.1% or Maryland is multiplied by 1.2 (that is the value plus 20 percent of the **value** which is **54.12 %).** The benchmark value should have been 54.12%, based upon the correct application of the 20 percent value. The benchmark value is not calculated as 45.1 % plus 20 additional percent as was incorrectly done to arrive at a value of 65.1**%.** The benchmarks provided in this document are incorrectly calculated. There is a significant difference in the two benchmarking values **54.12%** (the value plus 20 percent of the value) as opposed to **65.1%** (the value plus an additional 20 percentage points added). When looking at the low income numbers, the same serious mistake is made. A low income percentage of 8.6 % is indicated to be the percent of residents in Maryland that are identified as low income residents. The benchmark calculated in this document is 28.6 percent, as opposed to what it should have been (8.6 times 1.2 which equals 10.32%). To demonstrate the gross error in the benchmark calculations, if we look at the percent increase in values from 8.6 percent to 28.6 percent, we are looking at an increase of 332.558 percent in the values. That is, the benchmark calculated is more than three times higher than the percent of low income population for the state. This does not appear to be an

appropriate application of the mathematics. This created an unfair and unreasonable burden upon the population that is unacceptable at any level.

The identification of at risk populations is so flawed that it makes any assessment inaccurate and invalid that has been done. This assessment needs to be redone with appropriate calculations, and the rethinking of much of the methodology.

a. The correct application of the percent minority or low income population percentage plus 20% of the value should be used throughout this document.
b. All benchmarks should be recalculated.
c. County percentages should be used for comparison to percentages of minority and low income populations in the respective states as values for comparison.
d. Census tracts within the study area should be identified, and the demographics of those census tracts used in the analyses.
e. In addition to the statistics for each minority population that were presented separately, it may also be helpful to add a column combining the entire minority populations found in a given census tract.
f. It would be helpful to have tables with data at the census tract or block group level for the study areas that show percentages of minority and low income populations along with the state and county averages, all minority percentages combined, low income population percentages and the state and county averages, appropriate data for children, the elderly, or any other appropriate demographic for the study.

The calculations used to benchmark children in the study area uses the same incorrect and unacceptable mathematics. The error for the children's benchmark was the value plus an additional 10 percentage points. Why? Why not 20? Why not 30? Why not 5? Please provide the rationale. The use of the methodology is incorrect and seems arbitrary.

It cannot be determined if other aspects of the assessment are valid since the assessment methodology used to identify areas of potential Environmental Justice concern is flawed.

Environmental Justice is something that needs to be assessed at the local level. The assessment requires you to know what is going on at the community level. Using county level data does not assist in identifying communities of concern. The communities in question will be too small to be identified through county level assessment. The assessments need to be done at the census tract, or preferably at the block group level.

Protection of Children from Environmental Health Risks

Page 4-25 states, "The RDT&E activities conducted by NSWCDD would not disproportionally affect children, as activities would not have a greater effect on children than adults." This statement seems to disagree with the breath and scope of Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. As stated in Section 1 of the EO, "A growing body of scientific knowledge demonstrates that children may suffer

disproportionately from environmental health risks and safety risks. These risks arise because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults, children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves." Therefore, to the extent permitted by law and appropriate, and consistent with the agency's mission, each Federal agency:

(a) Shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and
(b) Shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

The DEIS states on page 4-25 that tract 8758.01 in St. Mary's County, Maryland is identified as having an unusual concentration of children. However, "no high or disproportionate adverse impacts would be borne by children as a result of the current RDT&E activities at NSWCDD." It is not clear how the Navy has come to this conclusion. Have studies been done to assess impacts to children? Has the population on tract 8758.01 been assessed to determine activities impact or is there a plan to monitor effects on this specific tract or others for trend setting information?

Health Impact Assessment

Considering the significant increase in activity proposed, the unknown threshold of exposure which may negatively impact human health, the wide span of potential impact and the cumulative impacts from other activities in the area, EPA suggests that this action warrants consideration of a Health Impact Assessment (HIA). An "HIA is a systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. Health impact assessment provides recommendations on monitoring and managing those effects." *(Adapted from the International Association for Impact Assessment's definition of health impact assessment.)*

For more information, contact the Board on Environmental Studies and Toxicology at (202) 334-3812 or visit http://dels.nas.edu/best.

Cumulative Impacts

Section 5, Cumulative Impacts and NEPA Considerations, presents a brief description of projects (past and present) in the area which may have the potential to influence the resources affected by the Proposed Action. It would have been helpful to have had the referenced projects depicted on a map to better appreciate where they are located in proximity to NSWCDD.

Section 5.2.5, The Summary of Cumulative Impacts Relative to the Proposed Action, presents a discussion of cumulative impacts to resources. Considering that other agencies/activities are ongoing and contributing to the incremental increase in impact to resources, is there a coordination effort among organizations to monitor resource impacts, especially with the DOD agencies?

Miscellaneous

Page 3-270, the "Buffering capacity" definition in the blue box is not complete; it is missing text.